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meters, 3.24 parts, while at the earth's surface the amount is 3.03 to 3.20. Nansen found, when crossing Greenland, that at elevations of 2,300–2,700 meters, and with a temperature of -20° , the amount of carbon dioxid was as great or even greater than at Stockholm. It seems now well settled that the old figure of 4 per 10,000 as the content of the atmosphere in carbon dioxid is decidedly too large, and that the amount varies locally within quite narrow limits, but with a tendency to increase slightly with the elevation. The cause of this variation is, as yet, unexplained, but the consumption of the gas near the surface of the earth by plants would seem to be a factor.

A SERIES of experiments on the resistance of cements to sea water was begun in 1856 at the harbor of La Rochelle, and is described in the *Thonindustrie-Zeitung* by E. Candlot. The experiments consisted in placing cubes of cement of different compositions, 60 centimeters long, where they would be covered by the sea at high tide and exposed to the air at low water. Blocks of cement without sand disintegrated more rapidly than those containing sand, and the best mixture was one volume of cement with from one to two volumes of sand. Such blocks lasted from twenty to thirty-eight years. This mixture corresponds to the least porous material, that is, the cement suffices to completely fill the interstices between the grains of sand. An excess of lime or magnesia in the cement is detrimental; this occurs when the quantity of silica and alumina is insufficient to saturate these bases. The best cement is that which requires least water for mixing, relative to the amount which it can hold chemically combined when 'set.' Portland cement was found to require very little excess of water, and hence gave the densest and least porous results and the maximum durability.

J. L. H.

SCIENTIFIC NOTES AND NEWS.

A PERMANENT CENSUS BUREAU.

WE are glad to note that Senator Chandler, Chairman of the Committee on the Census, reported favorably, on May 10th, the bill providing for taking the twelfth census and for the establishment of a permanent census service. This bill was drawn up by the Hon. Carroll D. Wright, Commissioner of Labor, in accordance with a joint resolution of Congress, and demonstrates the advantages of securing expert scientific advice in regard to proposed legislation. The main provisions of the bill are as follows:

It provides for a permanent census office at Washington, the duties of which shall be the taking of the twelfth and succeeding decennial censuses and the collection of other statistical information in intervening years. The Director of the Census and the Assistant Director are to be Presidential appointees, but the latter must be an experienced practical statistician. The other officers, including five chief statisticians at an annual salary of \$3,000 each, will be appointed under the civil service rules.

The sum of \$75,000 is to be appropriated for the organization of the office. It is estimated that the annual cost will be less than \$500,000, and that the decennial enumeration with the tabulation of results will cost an additional sum of about three or four million dollars. The permanent census bureau would consequently cost less than the eleventh census, for which some eleven and a half million dollars were expended. It is estimated by Mr. Wright that two million dollars of this sum can be charged directly to the fact that the force was not under civil service rules.

The bill provides for taking the census hereafter on April 15th in place of June 1st, as at the latter date the people are scattered from the cities. It is proposed to omit from the decennial census certain items regarding vital statistics, mortgages, Indians, etc., included in the eleventh census, these being in part relegated to other bureaus and to the separate States. The office would, however, issue annually accounts of agricultural products and biennially accounts of manufactures. Statistics of deaths and births would be obtained from the registration records

of the separate States and municipalities, supplemented by such data as the Director of the Census may think it advisable to secure. Statistics relating to the dependent, delinquent and defective classes would be published annually. It is hoped, further, to secure a quinquennial census of the population with the co-operation of the States.

ELIZABETH THOMPSON SCIENCE FUND.

THIS fund, which was established by Mrs. Elizabeth Thompson, of Stamford, Connecticut, 'for the advancement and prosecution of scientific research in its broadest sense,' now amounts to \$26,000. It is under the care of a board of trustees consisting of Henry P. Bowditch, President; William Minot, Jr., Treasurer; James M. Crafts, Edward C. Pickering and C. S. Minot, Secretary. As accumulated income will be available in November next, the trustees desire to receive application for appropriations in aid to scientific work. This endowment is not for the benefit of any one department of science, but it is the intention of the trustees to give the preference to those investigations which cannot otherwise be provided for, which have for their object the advancement of human knowledge or the benefit of mankind in general, rather than to researches directed to the solution of questions of merely local importance.

Application for assistance from this fund, in order to receive consideration, must be accompanied by full information, especially in regard to the following points: (1) Precise amount required. (2) Exact nature of the investigation proposed. (3) Conditions under which the research is to be prosecuted. (4) Manner in which the appropriation asked for is to be expended. The trustees are disinclined, for the present, to make any grant to meet ordinary expenses of living or to purchase instruments, such as are found commonly in laboratories. Decided preference will be given to applications for small amounts, and grants exceeding \$300 will be made only under very exceptional circumstances. All applications should reach, before November 1, 1897, the Secretary of the Board of Trustees, Dr. C. S. Minot, Harvard Medical School, Boston, Mass., U. S. A.

GENERAL.

THE House of Representatives, on May 11th, by a vote of 100 to 39, refused to concur in the Senate Amendment to the Civil Service Sundry Bill, revoking President Cleveland's order regarding the forest reservations. Both the House and the Senate are evidently in favor of the inauguration of an adequate forestry policy, and we feel sure that suitable arrangements will be made.

MR. GALLINGER has reported favorably, from the Committee on the District of Columbia, the bill 'For the further prevention of cruelty to animals in the District of Columbia.' It is to be hoped that this bill, which proposes onerous and useless restrictions on the advancement of the medical sciences, will not be passed by Congress. All the representative bodies most competent to form an opinion on the matter regard the proposed law as useless and harmful. These bodies include The National Academy of Sciences, the American Association for the Advancement of Science, the Academy of Natural Sciences of Philadelphia, and many other societies more competent than the Senate to decide whether any cruelty to animals has been practiced in the District of Columbia.

BY the death of the Duc d'Aumale, on May 7th, the Institute of France comes into possession of the Château of Chantilly with its great collections, a bequest valued at \$8,000,000.

PROFESSOR B. K. EMERSON, Professor O. C. Marsh, Professor S. F. Emmons, Mr. J. E. Spurr, Mr. A. H. Brooks, Professor W. H. Hobbs and Professor J. P. Iddings, all of the United States Geological Survey, will attend the coming International Geological Congress in Russia. They will be officially accredited to the Congress as representatives of the United States, the delegation to include also Professor G. P. Merrill, of the National Museum.

PRESIDENT DAVID STARR JORDAN, Mr. F. A. Lucas and Mr. Leonhard Stegner will again this year act as commissioners to investigate the condition of the seals, and will leave for the Pribyloff Islands on or about the 1st of June.

THE Civil Service Commission announces a competitive examination to fill a vacancy in the

position of anthropologist in charge of the Division of Anthropology in the United States National Museum. The duties of the position will be the administration of the division of anthropology and the carrying forward of original investigation and study of the collections. The salary is \$3,500 per annum. Competitors will be required to submit their answers to the inquiries and their essays on blanks furnished them by the Commission on or before June 1st.

At a meeting of the Council of the Australasian Association for the Advancement of Science held at Sidney on March 25th it was decided that the commencement of the next annual session be fixed for January 6, 1898. It was decided further to suspend the rule requiring an initiation fee from new members. The Hon. Secretary, Professor A. Liversidge reported that he had written to the Premier quoting the amounts of pecuniary and other aids afforded in the past to the Association by the respective governments of Victoria, New Zealand, Queensland, Tasmania and South Australia, and asking for similar support from the mother colony. Professor Baldwin Spencer, of Melbourne University, will deliver a popular lecture at the meeting on 'The Center of Australia,' with special reference to its ethnological aspects.

A MEETING of the International Committee of Weights and Measures was held at Sèvres, near Paris, beginning on April 13th. Dr. Wilhelm Förster, Director of the Berlin Observatory, presided, and there were representatives present from Germany, Austria, England, Russia, Norway, Switzerland and Portugal.

AN International Congress for the unification of methods for the testing of materials will be held at Stockholm on the 23d, 24th and 26th of August of the present year.

THE Russian National Health Society proposes to celebrate, next year, the 100th anniversary of the discovery of the mineral springs of the Caucasus by a conference on balneology and climatology.

THE current number of *Nature* contains the thirtieth article in the series on 'Scientific Worthies.' The subject of the present article is the eminent Italian chemist, Professor Stan-

islao Carmizzaro. The text, by Dr. T. E. Thorpe, is accompanied by a fine portrait.

THE Paris Academy of Sciences has nominated as its first choice, M. le Colonel Bassot; as its second choice, M. Lippmann, for the position in the Bureau of Longitudes, vacant by the death of Fizeau.

THE Paris *Société de secours des amis des sciences*, a society whose object it is to assist poor scholars and their families, held its annual meeting on April 29th, under the presidency of M. Joseph Bertram, who made an address on 'The life of a scholar in the sixteenth century.'

THE New York State Forest Preserve Board, which has the important duty of buying \$1,000,000 worth of Adirondack lands, held its first formal meeting on May 7th. Its members are Lieutenant-Governor Woodruff, State Engineer Adams and Forestry Commissioner Babcock. There were submitted to the Board offers of land in the Adirondacks amounting to over \$1,000,000 in value, a large part of which is on the southern slope of the Adirondacks, the region where the Board thinks the larger part of the appropriation should be spent.

THE American Academy of Arts and Sciences, at its annual meeting on May 12th, elected the following officers for 1897-98:

President, Alexander Agassiz; Vice-President, Class I, John Trowbridge; Vice-President, Class II, George L. Goodale; Vice-President, Class III, Augustus Lowell; Corresponding Secretary, Samuel H. Scudder; Recording Secretary, William Watson; Treasurer, Eliot C. Clarke; Librarian, Henry W. Haynes; Councillors, Henry Mitchell, Leonard P. Kinnicutt, Edwin H. Hall, in Class I; Henry P. Bowditch, William W. Davis, B. L. Robinson, in Class II; Barrett Wendell, John E. Hudson, Edward Robinson, in Class III.

At the same meeting the following persons were elected Associate Fellows: In the Section of Medicine and Surgery, William Osler, of Baltimore, and William Henry Welch, of Baltimore, and in the Section of Literature and the Fine Arts, Horace Howard Furness, of Philadelphia, and Edmund Clarence Stedman, of New York.

THE National Education Association meets this summer at Milwaukee, from the 6th to the 9th of July, which will be convenient for those

wishing afterwards to attend the meeting of the American Association at Detroit.

At the annual meeting of the New York Electrical Society, on May 20th, Mr. H. Baringer Cox was announced to lecture on the Thermopile, with practical illustrations of certain novel features.

THE valuable ornithological collection owned by the late D. von Homeyer has been purchased in part by Dr. W. Blasius for the Museum of Natural History at Brunswick, and in part by Dr. R. Blasius for his private use.

THE Appalachian Mountain Club, of Boston, has arranged for an excursion to Amherst, Mass., on May 21st to June 2d, and to Dublin, N. H., from June 16th to 21st. The Club gave an 'At home' on May 19th, at which a collection of mountain pictures lent by Mr. Charles Pollock was on view, and other pictures were shown, including photographs of the mountains of the moon taken at the Paris Observatory, views of the Rockies and of the wonderful Muir Glacier.

WE regret to record the death of Mr. Hugh Nevill, of the Ceylon civil service, who had discovered and described many new species in zoology and made valuable collections in ornithology and conchology.

THE Directory of Scientific Societies of Washington, for 1897, prepared and published by the Joint Commission, Mr. J. Stanley-Brown, Acting Secretary, bears witness again to the dominant position of Washington as a scientific center. The number of members of the several societies is as follows: Anthropological, 138; Biological, 156; Chemical, 89; Entomological, 41; Geographic, 1,040; Geological, 144; Philosophical, 120; the total membership of the societies being 1,728 and the total number of persons 1,450.

D. APPLETON & Co. announce, as a new volume in their 'Useful Story Series,' *The Story of Germ Life*, by Professor H. W. Conn.

LORD LISTER presided at the annual dinner of the Royal Literary Fund on May 5th, and the speeches made by Lord Lister, the Bishop of Stepney, Mr. Traill, Mr. Lockyer and the Earl of Crewe were all concerned with the relations of science to literature.

PROFESSOR H. MOISSAN will lecture at the Royal Institution, London, on May 28th, on the 'Isolation of Fluorine.'

REPLYING to a question in the British House of Commons, Sir Mathew White Ridley said that the number of persons licensed to practice vivisection at the present time in England was 145, in Scotland 52, and in Wales 1; the number holding the certificate dispensing with anaesthetics was in England 86, in Scotland 30, and in Wales none. The only figures in his possession as regards Ireland were those for 1895; in that year the number of licenses was 6, of whom one held a certificate dispensing with anaesthetics. In giving the honorable member these figures he might remind him that the certificate in question was never given for operations involving serious pain, but only for such operations as inoculations or hypodermic injections.

GOVERNOR BLACK has signed the bill authorizing New York City to make an additional bond issue of \$2,500,000 for the erection and equipment of four high schools.

DR. KOLLE, of the Berlin Institute for Infectious Diseases, has received a year's leave in order to proceed to Cape Colony, where he has been commissioned by the Cape government to continue the work on rinderpest and leprosy begun by Professor Koch.

A PORTRAIT of Lord Lister by Mr. Oules is said to be among the best pictures at the recently opened exhibition of the Royal Academy.

THOUGH an egg of the Great Auk was sold at auction recently for nearly \$1,500, it is by no means the rarest of birds, being positively common in comparison with the Labrador Duck and Pallas' Cormorant, and the extraordinary value attached to its remains is somewhat singular. An instance of this was shown at a sale in 1895, where an egg of the Great Auk brought 180 guineas, while a well preserved egg of *Æpyornis* sold for 36 guineas.

DR. W. F. MORSELL writes that the suites of typical rocks of the Educational Series which the United States Geological Survey has been preparing for several years are ready for distribution; and the higher institutions of learning,

to which they will go, have been notified of the fact. There are nearly 200 sets, of 156 specimens each. The institutions are expected to pay for transportation, but are under no further expense.

At the last meeting of the British Astronomical Association it was announced by the President (Mr. N. E. Green) that Miss Brown, the Director of the Solar Section of the Association, had presented £50 towards the expenses of erecting an observatory on the site offered by the Royal Botanical Society. Mr. J. G. Petrie, (Secretary), stated that the President had offered to commence the equipment of the observatory by presenting his 18-inch reflecting telescope, with which he had made many of his drawings, and that Mr. Calver had also offered optical aid.

ON Saturdays in June and July, when the Royal Botanic Gardens are opened to the public by payment of a fee, gardeners will be detailed to take visitors around the gardens to show the points of interest and describe the plants.

THE fifteenth anniversary of the Institution of Mechanical Engineers, London, was celebrated by a dinner on April 29th. Mr. E. Windsor Richard, the President, occupied the chair, and speeches were made by the Duke of Cambridge, Sir F. Bramwell, Professor Kennedy and others.

The Psychological Index, compiled by Dr. Howard C. Warren, of Princeton University, and Dr. Livingston Farrand, of Columbia University, and issued annually as a supplement to *The Psychological Review*, has been published for the year 1896. The bibliography of the literature of psychology and cognate subjects for that year extends to 145 pages and contains 2,234 titles. Psychology is one of the fifteen sciences to be included in the International Bibliography of Scientific Literature, but, while the plans for this great undertaking are being matured, *The Psychological Index* is essential to students of psychology and cognate subjects.

THE first two numbers of a *Zeitschrift für Criminal - Anthropologie, Gefängniswissenschaft und Prostitutionswesen*, edited by Dr. Walter

Wenge and published by M. Priber, Berlin, have been issued. These numbers include articles by Dr. Näcke on 'Lombroso and Modern Criminal Anthropology,' by Professor Preyer on the 'Hand-Writing of Criminals,' by Dr. Penta on 'The Rational Treatment of Criminals,' by Dr. Paul on 'Identification,' and other articles on similar subjects, together with a review of the literature.

UNIVERSITY AND EDUCATIONAL NEWS.

THE Governors of McGill University, in accordance with the custom of British and Canadian universities, announce that they are prepared to receive applications for the appointment to the chair of zoology recently founded by Sir Donald A. Smith. The annual salary is \$2,500. Candidates should forward applications with testimonials before June 1st to Mr. W. Vaughan, Secretary, McGill University, Montreal.

IT is announced that the College of Physicians and Surgeons of Chicago will be affiliated with the University of Illinois.

BARNARD College, New York, has received a gift of \$140,000 from Mrs. Josiah M. Fiske for a building to be called Fiske Hall in memory of her husband. This will enable the trustees to complete the new quadrangle, the other halls, provided by Mrs. Brinckerhoff and Mrs. Anderson, being now nearly ready for occupancy. Barnard College has also received \$6,000 from Mrs. Henry O. Havemeyer for the equipment of the chemical laboratory and \$2,000 from others for the furnishing of the Brinckerhoff Hall.

ROSSE Hall, Kenyon College, was burned May 9th. The loss is estimated at \$10,000.

THE chair of mineralogy and metallurgy in Columbia University, vacant by the retirement of Professor Thomas Egleston, will be divided, Professor A. J. Moses being promoted to a professorship of mineralogy, and Mr. H. M. Howe, a graduate of Harvard University and the Massachusetts Institute of Technology, being appointed professor of metallurgy.

THERE are 450 candidates for degrees this